

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph beginning at page 3, line 11, with the following rewritten paragraph:

A1
In an aspect of the invention a plating system is disclosed for plating on a plurality of conductive patterns formed at a surface of a substrate. A plating solution is applied on this surface and the exposure of other surfaces of the substrate to the plating solution is inhibited. A first electrode of the system is immersed in the plating solution while the second electrode is in contact with another surface of the substrate. The conductive patterns to be plated are temporarily electrically connected with the second electrode resulting in a uniform and selective deposition over the exposed surface of the substrate. Particularly, according to this aspect of the invention, a system is disclosed for plating on at least one conductive pattern, said conductive pattern being positioned at a first surface of a substrate having at least a first surface and a second surface, said system comprising:

a support with an electrically connectable electrode thereon;

a sealing element to inhibit the exposure of the second surface of the substrate to a plating solution; and

wherein said substrate is placeable on said support such that said electrode is in contact with said second surface of said substrate and wherein a contact to said first surface of said substrate is provided, said conductive pattern being temporarily electrically connected with said contact and said contact being electrically connected with said electrode.

Please replace the paragraph beginning at page 4, line 6, with the following rewritten paragraph:

A2
In another aspect of the invention, a substrate is disclosed having at least a first surface and a second surface opposite to said first surface, said first surface being exposable to a plating solution, said substrate comprising

a conductive pattern being positioned at said first surface of a substrate;

a contact to the first surface of the substrate; and

A2
Cont'd

said conductive pattern being temporarily electrically connected by a polysilicon or an amorphous silicon conductor with said contact and said contact being electrically connected with said second surface.

Please replace the paragraph beginning at page 4, line 19, with the following rewritten paragraph:

In a further aspect of the invention, a method is disclosed for plating on at least one conductive pattern formed at a surface of a substrate, said substrate having at least a first surface and a second surface, said method comprising the steps of:

A3

placing the substrate on an electrode being part of a plating holder such that said second surface of said substrate is in contact with said electrode and said conductive pattern is temporarily electrically connected to said conductive pattern; and

applying a plating solution on said first surface of said substrate thereby inhibiting exposure of said second surface to said plating solution.

Please replace the section "Brief description of the drawings" with the following rewritten section:

Brief description of the drawings

Figure 1 shows a plurality of structures to be plated. Each one of said plurality of structures (with boundary (2)) is connected to a polysilicon stripe which crosses the dicing line (1).

A4

Figure 2 is a magnified representation of a portion of Fig. 1 and shows a ~~metal (3)~~ a conductive pattern (3) of a first die, and a second die, being adjacent. The polysilicon stripe (4) extends from said conductive pattern (3) ~~metal (3)~~ over the dicing line (1) and is further connected to the substrate contact (105) on said second die.

Figure 3 shows a system for plating, comprising of a plating holder with a backside contact (8). Means for sealing (6), preventing the second surface of the

wafer being exposed to the plating solution are foreseen. A backside contact means is also present (7).

AY
cont'd

Figure 4 shows a cross-section view of the polysilicon stripes. Dicing along the dicing line (1) over the polysilicon stripe (4), results in disconnecting the electroplated structures from the substrate contact (10).

~~Figure 5 shows a top view of the polysilicon stripes.~~

Please replace the paragraph beginning at page 5, line 25, with the following rewritten paragraph:

AB

In an aspect of the invention a plating system is disclosed for plating on a plurality of conductive patterns formed at a surface of a substrate. A plating solution is applied on this surface and the exposure of other surfaces of the substrate to the plating solution is inhibited. A first electrode of the system is immersed in the plating solution while the second electrode is in contact with another surface of the substrate. The conductive patterns to be plated are temporarily electrically connected with the second electrode resulting in a uniform and selective deposition over the exposed surface of the substrate. Particularly, according to this aspect of the invention, a system is disclosed for plating on at least one conductive pattern, said conductive pattern being positioned at a first surface of a substrate having at least a first surface and a second surface, said system comprising:

a support with an electrically connectable electrode thereon (8);

a sealing element (6) to inhibit the exposure of the second surface of the substrate to a plating solution; and

where said substrate is placeable on said support such that said electrode (8) is in contact with said second surface of said substrate and wherein a contact to said first surface of said substrate is provided, said conductive pattern being temporarily electrically connected with said contact (10) and said contact being electrically connected with said electrode. Particularly, the electrical connection between the contact at the first surface of the substrate and the electrode at the second surface of the substrate can be a doped semi-conductive region of either an

A6
Contd

n-type conductivity or a p-type conductivity, or a metal via connection extending from the first surface to the second surface of the substrate. Furthermore, a metal contact can be provided at the second surface of the substrate.

Please replace the paragraph beginning at page 6, line 28, with the following rewritten paragraph:

A7

In an embodiment of the invention a system is disclosed for plating on a plurality of conductive patterns formed at a surface of a substrate. Each conductive pattern to be plated is temporarily electrically connected with a contact to the first surface of the substrate by a polysilicon conductor or an amorphous silicon conductor. Particularly, the conductive pattern is positioned on a first die and the corresponding contact is positioned on a second die different from said first die. Preferably said second die is adjacent to said first die to keep the polysilicon or amorphous silicon conductor as short as possible to minimize the resistance of the connection. Consequently the plating can be performed in a substantially uniform manner.

Please replace the paragraph beginning at page 7, line 8, with the following rewritten paragraph:

A8

In another embodiment of the invention a system is disclosed for plating on a plurality of conductive patterns formed at a surface of a substrate, where at least a part of a conductive pattern and/or a contact to a first surface of a substrate is covered with a layer to inhibit plating on said part. Particularly this layer can be a resist layer (9). By doing so the usually undesired plating of a contact to the first surface of the substrate can be avoided.

Please replace the paragraph beginning at page 7, line 27, with the following rewritten paragraph:

A9

In another aspect of the invention, a substrate is disclosed having at least a first surface and a second surface opposite to said first surface, said first surface being exposable to a plating solution, said substrate comprising

A9
Cont'd

a conductive pattern being positioned at said first surface of a substrate;
a contact to the first surface of the substrate; and
said conductive pattern being temporarily electrically connected by a polysilicon or an amorphous silicon conductor with said contact and said contact being electrically connected with said second surface.

Please replace the paragraph beginning at page 8, line 7, with the following rewritten paragraph:

A10

In a further aspect of the invention, a method is disclosed for plating on at least one conductive pattern formed at a surface of a substrate, said substrate having at least a first surface and a second surface, said method comprising the steps of:

placing the substrate on an electrode being part of a plating holder such that said second surface of said substrate is in contact with said electrode and said conductive pattern is temporarily electrically connected to said conductive pattern; and

applying a plating solution on said first surface of said substrate thereby inhibiting exposure of said second surface to said plating solution.

Please replace the paragraph beginning at page 8, line 20, with the following rewritten paragraph:

A11

In another embodiment of the invention, a plating solution is disclosed wherein said electrode and said conductive pattern are temporarily electrically connected by forming a polysilicon or an amorphous silicon conductor to temporarily connect said conductive pattern with a contact to the substrate, said contact being formed on the first surface of the substrate, and by providing an electrical connection between said contact and said electrode. The resistance of the electrical connection between the contact and the electrode is substantially independent of the location of the contact on the first surface of the substrate. Therefore, to achieve a high degree of uniformity over the substrate of the plating process, preferably the length of the polysilicon or the amorphous silicon

A11
Cmt'd

conductor should be kept as short as possible. On the other hand, one has to be able to easily cut the connection provided by the silicon or the amorphous silicon conductor after the plating process. Therefore, preferably, the conductive pattern is positioned on a first die and said contact is positioned on a second die different from said first die. By doing so, the connection can be cut by dicing the substrate. More preferably, said first and said second die are adjacent dies.

Please replace the paragraph beginning at page 9, line 15, with the following rewritten paragraph:

A12

In an embodiment of the invention, as an example, a system and a method for selectively electroplating a plurality of aluminum patterns is disclosed. The aluminum patterns to be plated are formed on the front side of a silicon wafer with a p-type conductivity. Each aluminum pattern (Fig. 1) to be plated is connected by means of a polysilicon line to an aluminum contact to the p-type substrate region of the wafer at the front side of the wafer. This contact is positioned on an adjacent die. The polysilicon line is isolated from the wafer by means of at least one dielectric layer (12). The polysilicon line extends over a dicing line (Fig. 2). Accordingly, all aluminum patterns to be plated are electrically connected to the back side of the wafer which can be provided with an aluminum metal contact.

Please replace the paragraph beginning at page 10, line 22, with the following rewritten paragraph:

A13

Finally, the wafers are stripped and diced. Figure 4 and figure 5 show ~~shows~~ respectively a cross-section and top view of the polysilicon lines. By dicing over the polysilicon lines, the electroplated structures are disconnected from the respective substrate contact.

Please replace the Abstract with the rewritten Abstract on the following page.

Appl. No. : 09/744,465
Filed : April 16, 2001

ABSTRACT

A system and a method for plating of a conductive pattern

A14 The invention presents methods and systems for plating conductive patterns which at least result in a high uniformity and avoid parasitical plating effects. A plating system is disclosed for plating conductive patterns formed at a first surface of a substrate. The system is such that exposure to surfaces not to be plated is inhibited. A first electrode of the system is immersed in the plating solution while the second electrode is in contact with another than thesaid first surface of the substrate. The conductive patterns to be plated are temporarily electrically connected with the second electrode.
